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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,434	11/18/2003	Charlotte Alback Thru	58404 (71432)	7002

21874 7590 04/09/2007  
EDWARDS ANGELL PALMER & DODGE LLP  
P.O. BOX 55874  
BOSTON, MA 02205

EXAMINER
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VIVLEMORE, TRACY ANN

ART UNIT	PAPER NUMBER
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1635

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/717,434	<b>Applicant(s)</b> THRUE ET AL.	
	<b>Examiner</b> Tracy Vivlemore	<b>Art Unit</b> 1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2007.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 43,47-51,53 and 55-96 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 43,47-51,53 and 55-96 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Any rejection or objection not reiterated in this Action is withdrawn.

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 18, 2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 43, 47-51, 53 and 55-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wahlestedt et al. (of record) in view of Crooke (US 5,898,031).

The claims are directed to oligonucleotides comprising alternating regions of locked and non-locked nucleic acids, wherein a first region of non-locked nucleotides has a length of 4-20 bases. In specific embodiments the claims are directed to specific nucleotides wherein the length of each region is defined, the locked nucleic acids are oxy-LNA, the internucleotide linkages may be modified, and the non-locked nucleotides comprise deoxynucleotides.

Wahlestedt et al. teach antisense oligonucleotides having LNA and non-LNA segments wherein the LNA includes oxy-LNA and the non-LNA sequences are DNA, RNA and analogues. Page 8 describes that the oligonucleotides of the invention comprise patterns of alternating locked and non-locked nucleotides of varying lengths that may comprise internucleotide linkages such as phosphorothioates. Wahlestedt teaches that the pattern of X-Y-X can be repeated, as indicated by the integer q, and because the integers m and p can be 0, this teaches oligonucleotides with the pattern X-Y-X-Y, meeting the limitations of the claims. Wahlestedt et al. do not teach sequences wherein the length of the non-locked nucleotides is 4-20.

It was well-known in the art at the time the invention was made to produce oligonucleotides of different lengths and modification patterns in order to optimize their properties. See for example Crooke, who teaches the use of gapmer oligonucleotides as antisense therapeutics. At example 22, columns 48-49, Crooke tests several sequences of gapmers and that the best performing sequences have deoxynucleotide regions of at least 5 nucleotides.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the oligonucleotides taught by Wahlestedt et al. in order to produce oligonucleotides having a sequence of non-locked nucleotides of 4-20 nucleotides and would further be obvious to modify the oligonucleotides to have both locked and non-locked regions of specific lengths. Based on the well-known practice in the art of optimization that is exemplified by Crooke, one of ordinary skill in the art would be motivated to modify the invention of Wahlestedt et al. to produce antisense oligonucleotides wherein the individual segments have particular lengths in order to produce an antisense oligonucleotide having the necessary degree of specificity and stability suitable for their particular application. Additionally, MPEP section 2144.05 describes that routine optimization or experimentation of what is known in the prior art supports a prima facie case of obviousness. One of ordinary skill in the art would have had a reasonable expectation of success in producing antisense oligonucleotides having the specific lengths recited in the instant claims because it is routine in the art of nucleic acid synthesis to produce oligonucleotides of any desired sequence length and configuration.

Thus, the invention of claims 43, 47-51, 53 and 55-96 would have been obvious, as a whole, at the time of invention.

### ***Response to Arguments***

Applicant's arguments filed January 18, 2007 have been fully considered but they are not persuasive. Applicants state there is no motivation or reasonable expectation of success in modifying the reference of Wahlestedt et al. in order to make the claimed invention. This is not persuasive because a motivation and expectation of success are set forth in the rejection and applicants provide a mere allegation unsupported by additional argument.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Vivlemore whose telephone number is 571-272-2914. The examiner can normally be reached on Mon-Fri 8:45-5:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Schultz, can be reached on 571-272-0763. The central FAX Number is 571-273-8300.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight

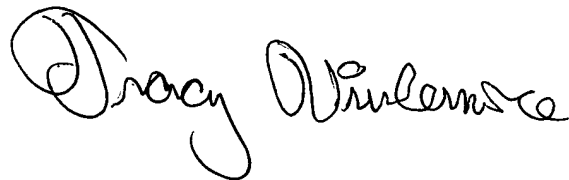
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(EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Tracy Vivlemore  
Examiner  
Art Unit 1635

TV  
March 19, 2007

A handwritten signature in black ink, reading "Tracy Vivlemore". The signature is written in a cursive, flowing style with a large initial "T".